

LA-UR-20-24683

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Title: The Road to Trinity Seventy-five years ago, Los Alamos scientists detonated the world's first nuclear explosion

Author(s): Whitacre, Madeline Helene
Carr, Alan Brady

Intended for: Web

Issued: 2020-06-26

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The Road to Trinity

Seventy-five years ago, Los Alamos scientists detonated the world's first nuclear explosion

By Madeline Whitacre, archivist-historian, and Alan Carr, senior historian, [National Security Research Center](#)

With a brilliant hot flash and a loud boom, the giant mushroom cloud with its fiery core filled the predawn sky above the New Mexico desert.

The nuclear age had begun.

It was 75 years ago on July 16, 1945, that Los Alamos scientists changed the world with the successful detonation of “the Gadget” – the device created to test the Fat Man implosion-type plutonium weapon before it was taken into combat.

However, the road to Trinity, as the test was named by J. Robert Oppenheimer, who is thought to have been inspired by a line in a John Donne poem, was a difficult one.

From Day One

Over the course of about 28 months in the early 1940s, the secret lab in Los Alamos developed two types of nuclear weapons. Little Boy, the uranium, gun-type weapon dropped on Hiroshima, did not undergo a full-scale nuclear test. However, Fat Man, the implosion-type nuclear weapon, did because scientists did not want to risk dropping a significant portion of the world's supply of plutonium over enemy territory should the device not detonate.

Location, Location, Location

Physicist Kenneth Bainbridge was chosen as the Trinity test director and ultimately selected Jornada del Muerto (often translated as Journey of the Dead Man) as the Gadget's test site. As a part of the Alamogordo Bombing and Gunnery Range, the location was already owned by the government and it was near the Los Alamos lab (200-some miles to the south).

In order to keep the secret of the bomb after the Trinity test, two press releases were prepared. One stated that a munitions dump had exploded at the bombing range and a second stated that a munitions dump containing gas shells had exploded. The latter would be distributed in case nearby populations needed to evacuate.

The Nuclear Age Begins

As the Trinity test day approached, there were some tense moments. The plutonium had expanded from the summer heat and wouldn't fit into the Gadget, so it had to cool in the shade. Then, thunderstorms delayed the detonation for almost an hour and a half.

Finally, years of research and effort culminated at 5:29 a.m.

The power from the Gadget's detonation was equivalent to around 21,000 tons of TNT and destroyed the tower on which it had been placed. The mushroom cloud grew to about 3,280 feet wide, then rose in a column of smoke to a height in excess of 40,000 feet.

As the team looked on, feelings reportedly ranged from surprise to relief to jubilation to dread, with a common hope that World War II would be over soon.

Box: Records on the Gadget and the Trinity test are part of the collections in the [National Security Research Center](#) – the Lab's classified library located in the National Security Sciences Building. The NSRC houses the world's most comprehensive collection of nuclear security materials.

Captions:

1. Kenneth Bainbridge was appointed the director of the Trinity test. He selected the location for the Gadget's detonation.
2. A letter from Kenneth Bainbridge, Trinity director, discusses what would become the test site for the implosion-type nuclear weapon developed at the Lab.
3. A map of the Trinity test site shows its location, which was selected by Physicist and Trinity Test Director Kenneth Bainbridge.
4. A newspaper report describes the Trinity test, which was characterized as an ammunition explosion connected to Alamogordo Air Base, in order to maintain the secrecy of the Los Alamos nuclear weapons development.
5. The Trinity test, shown in this photograph taken by Jack Aeby, on July 16, 1945, was the world's first nuclear explosion and one of the greatest scientific achievements of all time.



Kenneth T. Bainbridge

UNCLASSIFIED

Major De Silva

22 June 1944

K. T. Bainbridge

Requests for Maps #5

VERIFIED UNCLASSIFIED

UNCLASSIFIED

GROUP

12/14/47

1. The New Mexico area from $106^{\circ}6'$ - $106^{\circ}43'$ and latitude from $33^{\circ}55'$ - $33^{\circ}47'$ is now set aside for an Army bombing range and aerial machine gun practice range. This is an excellent area in every way for our purpose, and we should have as much information as possible concerning

- a) How the land owner rights were taken care of.
- b) Information on the new roads put in by the Army, which are not on the present State Highway maps.
- c) What areas within this area are still inhabited, as we found to be the case in spite of falling 50 cal. cartridges.
- d) Under what conditions we could make an exploration of this area, when no bombing or strafing was going on.
- e) Finally, you should determine how much is involved in the release of this area by the present training group and its assignment for the use of the Project.

YTB:br

K. T. Bainbridge

cc: W.S. Parsons
G.B. Kistkaowsky
J. Oppenheimer
Major Stevens

CLASSIFICATION CANCELLED
PER DOC REVIEW JAN. 1973

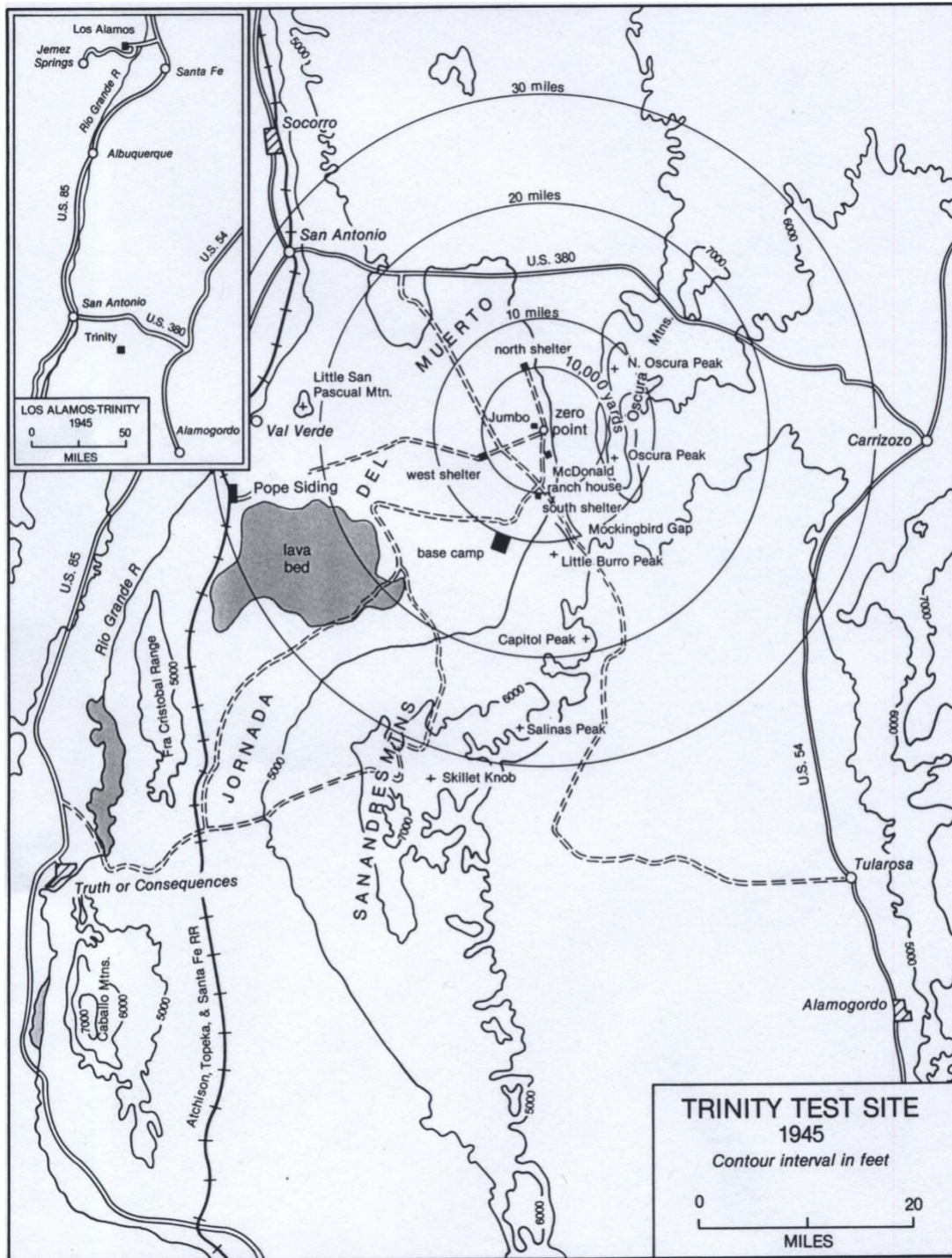
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A map of the Trinity test site shows its location, which was selected by Physicist and Trinity Test Director Kenneth Bainbridge.

Munitions Explode at Alamo Dump

(By The Associated Press)

An ammunition magazine exploded early today in a remote area of the Alamogordo Air Base reservation, producing a brilliant flash and blast which were reported to have been observed as far away as Gallup, 235 miles northwest.

Col. William O. Eareckson, Alamogordo commandant, declared there was "no loss of life or injury to anyone, and that property damage outside of the explosives magazine itself were negligible."

His statement said the magazine contained "a considerable amount of high explosives and pyrotechnics," and that "weather conditions affecting the content of gas shells exploded by the blast" might make it desirable to evacuate temporarily a few civilians.

There is a civilian area on the reservation.

At Alamogordo, 10 miles from the base, Mrs. Tom Charles said she knew of no damage there from the explosion.

At Silver City, 135 miles southwest, and at Gallup the blast rattled windows. The vivid flash preceding the concussion by several minutes was reported seen near Silver City, Gallup, and on highways around Albuquerque, 150 miles north.

"I saw a flash of fire followed by a violent explosion and smoke," reported Ranger Ray Smith on duty at the Lookout Mountain tower, near Beaverhead, northwest of Silver City.

He said there were two other smaller explosions, occurring at 5:30 a. m. He said he had no explanation for the blasts.

From Gallup came reports that two explosions rattled windows there this morning and awoke a number of persons at 5:45 a. m.

An explosion heard near Socorro "lighted up the sky like the sun," reported Joe Willis, Socorro theater operator.

ALBUQUERQUE JOURNAL



Alamogordo Blast Jolts Wide Area

Continued from Page One

Albuquerque is 150 miles from Alamogordo.

Gallup residents reported their windows were rattled by two explosions at about 5:45 a. m. Officials at the nearby Wingate ordnance depot reported they knew of no blast there.

At Silver City, 135 miles west of Alamogordo, the windows rattled and at a tower on Lookout Mountain near Beaverhead, northwest of Silver City, Forest Ranger Ray Smith said he saw a flash of fire followed by a violent explosion and smoke in the direction of Alamogordo.

Smaller Explosions

strewn grounds of structures. (from Signal Corps).

He said there were several smaller explosions and placed the time at 5:30 a. m.

In Alamogordo, 10 miles from the base, Mrs. Tom Charles said the explosion had caused no particular comment and no damage so far as she knew.

Eareckson's statement said "weather conditions affecting the content of gas shells exploded by the blast may make it desirable for the Army to evacuate temporarily a few civilians from their homes."

There is a civilian area on the Alamogordo reservation.

Appeals Workers

from Page One

it for the Big Three asserted:

ands of the Japanese met, the railroads



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